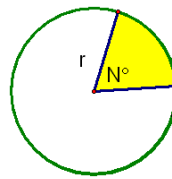
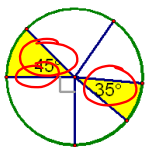


# 11-5 Geometric Probability



Area of Sector

$$A = \frac{N}{360} \pi r^2$$



Find the area of each sector.

d = 18 in

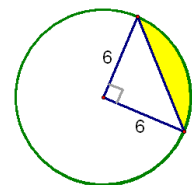
$$A_{45} = \frac{45}{360} 81\pi \approx 31.8 \text{ in}^2$$

$$A_{35} = \frac{35}{360} 81\pi \approx 24.7 \text{ in}^2$$

$$A_{\text{shaded}} = 56.5 \text{ in}^2$$

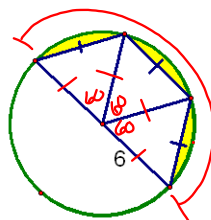
Find the area of the segment.

$$A_{\text{sector}} - A_{\text{triangle}} = \frac{90}{360} 36\pi - \frac{1}{2} 6 \cdot 6 = 9\pi - 18 \approx 10.3 \text{ in}^2$$



Find the area of the shaded region.

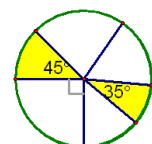
$$3(A_{\text{segment}}) = 3(A_{\text{sector}} - A_{\text{triangle}}) = 3\left(\frac{60}{360} 36\pi - \frac{36\sqrt{3}}{4}\right) = 3(6\pi - 9\sqrt{3}) \approx 9.8 \text{ in}^2$$



$$\text{Probability} = \frac{\# \text{ of successes}}{\# \text{ of outcomes}}$$

ex 1

What is the probability that a point (in the circle) chosen at random lies in the shaded region?



d = 18 in

$$P = \frac{A_{\text{shaded}}}{A_{\text{whole picture}}} = \frac{56.5}{81\pi} \approx .22$$

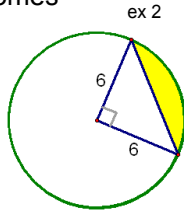
$$\frac{\text{Sector}}{80} = \frac{80}{360} \Rightarrow P = .22$$

$$\text{Probability} = \frac{\# \text{ of successes}}{\# \text{ of outcomes}}$$

What is the probability that a point (in the circle) chosen at random lies in the shaded region?

$$P = \frac{10.3}{(36\pi)}$$

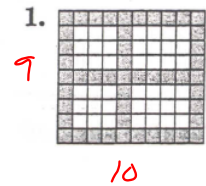
$$P \approx .09$$



## Worksheet examples.

$$P = \frac{48}{90}$$

$$\approx .53$$



$$P = \frac{A_{\text{shaded}}}{A_{\text{whole}}}$$

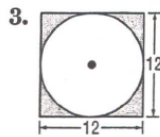
$$\frac{A_{\text{sq}} - A_{\text{circle}}}{A_{\text{sq}}}$$

$$A_{\text{sq}} = 144 \text{ m}^2$$

$$A_{\text{circle}} = 36\pi$$

$$P = \frac{(144 - 36\pi)}{144}$$

$$.21$$

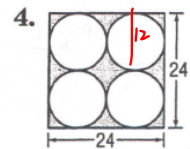


$$A_{\text{sq}} - 4(A_{\text{cir}})$$

$$A_{\text{sq}} = 576$$

$$A_{\text{cir}} = (36\pi) \times 4$$

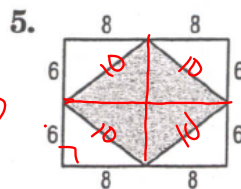
$$P = \frac{(576 - 4 \cdot 36\pi)}{576} \approx .21$$



$$\frac{A_{\text{sh}}}{A_{\text{rect}}} = P$$

$$\frac{\frac{1}{2} 16 \cdot 12}{16 \cdot 12}$$

$$P = .5$$

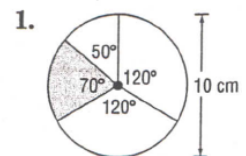


$$d_1 = 16$$

$$d_2 = 12$$

$$P = \frac{70}{360}$$

$$= .19$$

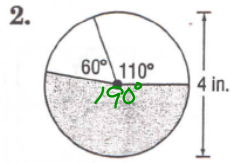


$$\frac{70}{360} = \frac{7}{36}$$

$$\frac{7}{36} \approx .19$$

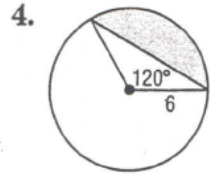
$$\frac{190}{360}$$

$$P = .53$$



$$P = \frac{A_{\text{shaded}}}{A_{\text{circle}}}$$

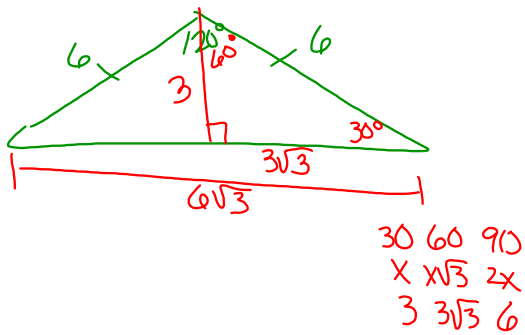
$$= \frac{A_{\text{sector}} - A_{\Delta}}{A_{\text{circle}}}$$



$$A_{\text{sector}} = \frac{120}{360} 36\pi = 12\pi$$

$$A_{\text{circle}} = 36\pi$$

$$A_{\Delta} = \frac{1}{2} 6\sqrt{3} \cdot 3 = 9\sqrt{3}$$



HW

p625-626

7, 10-12, 16-19